



EFFECT OF MUSKMELON PULP ON QUALITY OF BURFI BY INCORPORATION OF STEVIA

*Ranjeet Chunilal Kokani¹ | Harshal Dinesh Gawale² | Akash Aanata Pawar²

¹Principal, College of Food Technology, Saralgaon Tq. Murbad Dist. Thane, Affiliated to Dr.B.S.K.K.V.Dapoli (Maharashtra).

²Student, College of Food Technology, Saralgaon Tq. Murbad Dist. Thane, Affiliated to Dr.B.S.K.K.V.Dapoli (Maharashtra).

ABSTRACT

Burfi is a popular khoa based confection and it contains considerable amount of milk solids. The manufacture of value added product by using muskmelon fruit which is rich in IU Vitamin A (3420), Vitamin C (26g) and Potassium (341mg). The present study was undertaken with the objective of developing Burfi with enhanced nutritional properties and acceptable sensory attributes. The product was prepared by using khoa (6% Fat), Muskmelon along with stevia powder in the ratio of T0 (95:00:05), T1 (45:50:05), T2 (35:60:05), T3 (25:70:05). Preparation of Burfi khoa taken in pan add muskmelon pulp and stevia, heating continuous stirring cum scrapping up to desired consistency then spreading on butter paper and cut into rectangular shape. The proximate analysis of prepared Burfi was analyzed Ash (3.2%), Carbohydrate (23.10%), Fat (16.54%), Moisture (19.20%), Protein (20.18%) and Carbohydrate (321.98 kcal). Sensory evaluation T2 received highest scores (9) for colour and appearance, texture (8.5), flavour (8.5) and taste (8) on 9 point Hedonic Scale. It was concluded that the Burfi made from Muskmelon Fruit can be store for 20 days in butter paper and aluminum foil at 50C Temperature. So the Burfi made from Muskmelon Fruit can be satisfy the consumer in accepts and quality.

KEYWORDS: Burfi, Khoa, Muskmelon, Formulation, Sensory evaluation, proximate analysis, Storage study.

INTRODUCTION:

Milk is the traditional diet has varied greatly in different region of the world. Milk is regarded as a complete food in a human diet. Milk is provided the entire nutrient essential for the nourishment of the human body. Milk is consume as a whole or by converting it into various milk products like concentrated milk product, coagulated, fermented, fat rich and frozen milk product. Milk sweets have been an inseparable part of the socio-cultural life in the Indian sub-continent. The reflect wealth and status of the people. In India khoa is widely as a base material for the preparation of variety of popular indigenous sweets. It contains fairly large quantities of muscle building protein, bone farming minerals and energy giving fat and lactose (Bhutkar et al., 2015).

India is world's largest producer of milk, producing 127.85 million tonnes per annum, that is 15% of world's milk production (Sharma et al., 2014). About 50-55% of the total milk produced in India is converted into traditional milk products such as paneer, dahi, khoa, etc, while share of the khoa is about 7% out of total milk production (Kumar, 2013).

Burfi is one of the most popular khoa based sweet, prepared from cow or buffalo milk. Burfi is prepared by heating the mixture of khoa and sugar to a near homogenous consistency followed by cooling and cutting it into small cuboids (Chetana et al., 2010). It basically has mild caramelized flavor. Its colour may vary from light off white, creamy to light brown. Good quality Burfi is characterized by moderately sweet taste, soft and slightly greasy body and smooth texture with very fine grains. Due to unique adaptability of khoa in terms of its flavor, body and texture to blend with wide variety of food, various forms of Burfi are available with different additives depending on regional preference viz. plain, mawa, chocolate, fig, rawa, cashewnut, coconut, chocolate, etc (Golande et al., 2012; Kamble et al., 2010).

The unique adaptability of khoa in terms of its flavour, body and texture to blend with a wide range of food adjust had permitted development of an impressive array of Burfi varieties. In India for all the classes of people the fruits like papaya, orange, pineapple, fig, Muskmelon, guava etc are popular and regular consumed fruits. The manufacture of value added products like filled dairy products could be a better alternative. From the nutritional point of view Muskmelon fruit is a good source of sugar and various vitamins like A and C it also contains calcium, phosphorus, iron, potassium. Now-a-day local producers are using orange, mango, coconut etc in preparation of Burfi. In present study the Muskmelon used for the Burfi.

Muskmelon (*Cucumis melo* L.) commonly called as cantaloupe is a member of Cucurbitaceae family. Consumer preference for this fruit is determined largely by its rich source of phytonutrients, sweetness, flavor or aroma and texture. Muskmelon is commercially important fruit cultivated throughout the world, in tropical and sub - tropical countries. In India, muskmelon occupies an area of about 36.70 thousand hectares with an annual production of about 760.81 thousand metric tonnes (Indian Horticulture Database, 2015).

The fruit crop is cultivated widely by farmers in our country particularly during the summer season. The important varieties grown in India are 'Pusa Sarbati',

'Hara Madhu', 'Pusa Madhuras', 'Arka Rajhans', 'Arka Jeet', 'Durgapur Madhu', and 'Narendra Muskmelon-15'. Muskmelon is commonly cultivated in Punjab, Tamil Nadu, Lucknow, Uttar Pradesh, Maharashtra, and Andhra Pradesh.

Muskmelon flesh contains 3.5 g carbohydrates, 0.3 g protein, 0.2 g fat, 3420 IU vitamin A, 26 mg ascorbic acid, 23 mg calcium, 1.4 mg iron, 14 mg, phosphorus and 341 mg potassium. Muskmelon is relished as a desert fruit, low in calories and fats or cholesterol and is an excellent source of vitamin A and C and minerals. In melons there are many phytochemicals that may have a vast array of potential health benefits.

The most important genera of melon, cucumis (muskmelon) and citrullus (water melon), are also known as sweet melons or dessert. Melon is one of the most widely used fruits and stands at 4th in ranking of mostly consumed fruits in the world as source of food. Muskmelon has a high commercial value and is appreciated because of its peculiar sensory and nutritional characteristics.

However, it has a very short postharvest shelf-life exhibiting a sign of quality degradation by excessive softening, flavor deterioration, a decline in sugar content and therefore increased vulnerability to pathogens. Hence transport of the matured fruit to long distance markets increases the risk of quantity and quality loss leading to enormous wastage. Due to lack of appropriate storage and trade expertise, producers are enforced to dispose their harvest at minimal rate leading to diminishing returns during the glut season. It is reported that in developing countries producers lose more than 35 % or 32 - 40 billion annually, after the crop is ready to harvest and before it is consumed (Parveen et al., 2014)

MATERIALS AND METHODS:

Procurement of Raw Material:

Raw materials required during present investigation were procured from local market of Saralgaon such as muskmelon fruit, khoa and stevia powder etc. Most of the chemicals and equipments used in this investigation were of analytical grade which are obtained from College of Food Technology Saralgaon, Thane

Physical Properties of Burfi:

The colour and shape of Burfi was determined by visual observations, the length, breadth and width of Burfi was measured by vernier caliper. Total Soluble solids determined by using hand refractometer. The weight of Burfi was measured on analytical weighing balance.

Chemical Properties of Burfi:

Proximate composition such as moisture, ash, crude fat, crude protein and crude fibre of all the Ingredients and Crackers was determined according to the procedures given in AOAC (2000). For moisture determination samples were dried in oven at 130°C for 60 minutes. For ash determination samples were placed in muffle furnace at 550°C to burn out all carbon compounds leaving in organic part (ash). Fat was determined by fat extraction unit by using Hexane. For fibre determination, samples were treated with 1.25% Sulphuric acid and Sodium Hydroxide solution. After filtration of digested material it was washed with hot water and then ignited. By calculating loss of weight after ignition, crude fibre contents were determined. Protein contents were determined by using Kjeldahls unit.

Sensory Evaluation of Burfi:

Prepared product were evaluated for sensory characteristics in terms of appearance, color, flavor, after taste, texture and overall acceptability by 10 semi-trained panel members comprised of academic staff members using 9- point Hedonic scale. Judgments were made through rating the product on a 9 point Hedonic scale with corresponding descriptive terms ranging from 9 'like extremely' to 1 'dislike extremely'. The obtained results were recorded in sensory score card.

Statistical Analysis of Burfi:

The analysis of variance of the data obtained was done by using completely randomized design (CRD) for different treatments as per the method given by Panse and Sukhatme (1967). The analysis of variance revealed at significance of $p < 0.005$ level S.E and C.D. at 5 percent level is mentioned wherever required.

Formulation of Burfi:

Burfi prepared with incorporation varying levels of Muskmelon, Khoa and Stevia were investigated. The formulation viz., 00:95:05, 50:45:05, 60:35:05 and 70:25:05 percent T0, T1, T2 and T3 respectively. Sample T2 of Muskmelon Burfi was organoleptically acceptable and used for further study. Stevia were used at 5g percent in each formulation of Burfi.

Formulation of Burfi:

Ingredients	Treatments			
	T0	T1	T2	T3
Muskmelon Pulp	00	50	60	70
Khoa	95	45	35	25
Stevia	05	05	05	05

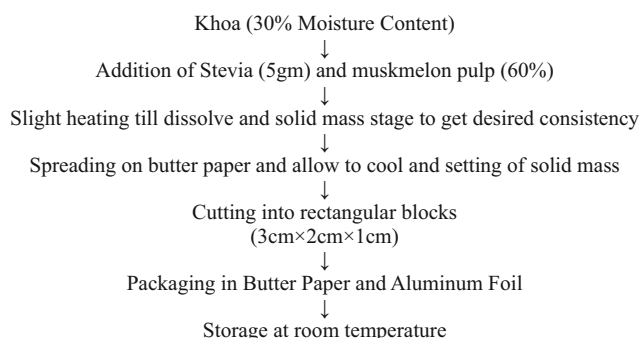
Where,

T0-00 g Muskmelon pulp + 95 g khoa

T1-50 g Muskmelon pulp + 45g khoa

T2-60 g Muskmelon pulp + 35g khoa

T3-70 g Muskmelon pulp + 25g khoa

Preparation of muskmelon Burfi:**Flow sheet for Preparation of muskmelon Burfi incorporated with stevia:****RESULTS AND DISCUSSION:****Physical Properties of Muskmelon Burfi:**

Physical properties	Muskmelon Burfi
Colour	Yellowish
Shape	Rectangular
Weight	10gm
Dimension	3cm x 2cm x 1cm
TSS	760Brix

Colour of muskmelon Burfi incorporated with stevia was Yellowish which was determined by visual Observation. The shape was rectangular with Dimension of muskmelon Burfi incorporated with stevia 3cm x 2cm x 1cm. The weight of 1 muskmelon Burfi incorporated with stevia was 10gm and TSS 760Brix respectively.

Chemical Properties of Muskmelon Burfi:

Chemical Parameter	Selected Sample
Ash	3.2%
Moisture	19.20%
Fat	16.54%
Protein	20.18%
Carbohydrates	23.10%
Energy Value	321.98 kcal

It concludes that proximate composition of muskmelon Burfi incorporated with stevia were found to be Ash content 3.2 %, Moisture content 19.20, %Fat content 16.54%, Protein content 20.18%, Carbohydrate content 23.10% and Energy value 321.98Kcal respectively. It concluded that muskmelon Burfi incorporated with stevia rich in Protein.

Sensory Evaluation of Muskmelon Burfi:

Parameter	T0	T1	T2	T3
Colour	9	8	9	8.5
Flavour	8	8	8.5	8
Taste	8	7	9	8
Texture	8	8	9	6
Appearance	9	8	9	7.5
Overall acceptability	8	7	9	7

As evident in sensory evaluation the color score were higher for the sample T2 and T3. The Texture and taste score were 9 higher than T1 and T3 sample. Overall acceptability of T2 sample is more acceptable than sample T1 and T3. sample T2 satisfy the consumer in accepts and quality.

CONCLUSION:

It may concluded that the superior quality of Muskmelon Burfi incorporated with Stevia can be prepared by addition of 60% of Muskmelon pulp, 35% khoa and 5% of Stevia as the overall acceptance for treatment combination T2 was highest in all the parameters as compare to T1 and T3. Muskmelon Burfi incorporated with Stevia rich in Vitamin A, C and other minerals. The product can satisfy the consumer in accepts and quality.

REFERENCES:

- Arabsalmi, K., (1996). Evaluation of flowering, fruiting and effect of seed extraction time on seed quality characters of cantaloupe (cucumis melo). M. Sc., Th., Univ. of Tabriz, Iran: 65 – 80.
- Chetana, R., Ravi, R. and Yella Reddy, S., (2010). Effect of processing variables on quality of milk burfi prepared with and without sugar. J. Food Sci. Tech., 47(1): 114- 118
- G. Pandidurai and P. Vennila., (2018). Studies on Development of Fruit Powder from Muskmelon (Cucumis Melo L.) by Using Spray Drier. Madras Agric. J., 105 (4-6): 215- 219
- Golande, S.S., Ramod, S.S., Chopade, A.A. and Poul, S.S., (2012). Organoleptic quality and cost of manufacturing of sweet orange Burfi. Res. J. Animal Hus. Dairy Sci., 3(2): 45-49.
- Yehia, E. M. Arif, A. M. El Lithy and M. M. Atallah., (2009). Physical and Mechanical Properties of Cantaloupe Applied to Design Seed extraction Machine. Misr J. Ag. Eng., 27 (2): 600 - 612
- Kamble, K., Kahate, P.A., Chavan, S.D. and Thakare, V.M., (2010). Effect of Pineapple Pulp on Sensory and Chemical Properties of Burfi. Vet. World., 3(7): 329-331
- Kapila Kamble, P.A. Kahate, S.D. Chavan and V.M. Thakare., (2010). Effect of Pineapple Pulp on Sensory and Chemical Properties of Burfi. Veterinary World Vol.3(7): 329-331
- Kumar M., (2013). Up-gradation of Khoa Production and Preservation Technologies. A J. Phys. Sci. Eng. Technol., 4: 37-46.
- M.A. Khan, A.D. Semwal, G.K. Sharma, D.N. Yadav And K.A. Srihari., (2008) Studies On The Development And Storage Stability Of Groundnut (Arachis Hypogea) Burfi. Journal of Food Quality 31 (2008) 612–626. © 2008 The Author(s) Journal compilation © 2008 Wiley Periodicals, Inc.
- Narasimhachar S. Vijayalakshmi, Ambiga R. Indiramma, Prema Viswanath, Anupama Dattatreya And Koneripatti R. Kumar., (2005). Extension Of The Shelf-Life Of Burfi By Packaging. Journal of Food Quality 28(2005) 121–136. All Rights Reserved. © Copyright 2005, Blackwell Publishing
- Parveen S, Ali M A, Asghar M, Khan A.R. and A. Salam., (2012). Physico-chemical changes in muskmelon (Cucumis melo L.) as affected by harvest maturity stage. J Agric Res, 50:249-60
- Parveen S., I. Bushra., K. Humaira., S. Shazia and M.A. Azhar., (2014). Value addition: A tool to minimize the post-harvest losses in horticultural crops. Green. J. Agric. Sci. 4(5):195-198
- Ranjit V. Patil, Pushkraj J. Sawant, Dhruvaraj N. Sawant and Sachin R. Todkar., (2015). Physicochemical Analysis and Sensory Evaluation of Burfi Enriched with Dried Date. Journal of Animal Research: v.5 n.1, p. 131-134. April. 2015
- Sharma, B., Kumar, S., Yadav, S. and Sharma, J., (2014). Physico- Chemical and Sensory analysis of Probiotic Dahi Packed in Oxobiodegradable and Areca Nut Sheath Cups. J. Anim. Res., 4(1): 59-64.
- Mete BS, Shere PD, Sawate AR and Patil SH., (2017). Studies on preparation of khajoor (Phoenix dactylifera) burfi incorporated with honey. Journal of Pharmacognosy and Phytochemistry 2017; 6(5): 403-406
- S.S. Bhutkar, Jadhav, D.H. and Tungar, N.M., (2015) Effect of Elephant Foot Yam Pulp on Sensory and Chemical Properties of Burfi IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS) e-ISSN: 2319-2380, p-ISSN: 2319-2372. Volume 8, Issue 4 Ver. I (Apr. 2015), PP 22-24 www.iosrjournals.org
- S. V. Lahankar, S. G. Narwade and N. S. Kamble., (2018). Preparation of Burfi Blended With Green Peas Int. J. Curr. Microbiol. App. Sci (2018) Special Issue-6: 2320-2325
- USDA (U.S. Department of Agriculture), USDA National Nutrient Database., (2007).

URL: <http://www.nal.usda.gov/fnic/foodcomp/>, Accessed 12/02/2007

19. Vandana Chaudhary, Suman Bishnoi and Apoorva Argade (2010) Development and characterization of aloe vera juice incorporated burfi. The Pharma Innovation Journal 2019; 8(5): 407-411
20. Yehia, I., Kabeel, M. H. and Abdel Galeel, M. M., (2009), Physical and mechanical properties of Ponkan mandarin applied to grading machine, Misr J. Ag. Eng. 26(2): 1036-1053